

Desiree McCaslen - Re: Big Ox

From: Desiree McCaslen
To: lheadquist@southsiouxcity.org
Date: 5/15/2015 11:28 AM
Subject: Re: Big Ox
CC: Jade Dundas; Kevin Bradley; Matt Cole
BC: blivermore@southsiouxcity.org

Gentlemen-

Thank you for taking the time to meet us today. We look forward to reviewing the permit application and facility plan in the next few months. As discussed:

- In addition to wastewater from BPI, CHS and Richardson Milling, the City of South Sioux and Big Ox are currently evaluating additional wastewater from Tyson, Inc. for discharge and treatment at the SSC facility.
- Projected max discharge volume of 3.0 MGD within the next 3 years, 90% of which will be direct discharge waste streams.
- The facility will work with the Pretreatment Department on the development of an Emergency Response Plan.
- Sioux City and South Sioux City will work on amending the 28E agreement to accommodate the projected volume increase.

Additionally, the Pretreatment Department will work with EPA region 7 on the applicability of the categorical regulation once the permit application is received.

If you need or think of anything else in the interim please let me know.

Thanks again.

Dez


Desiree McCaslen

Pretreatment Manager

Office: (712)-279-6987

Cell: (712)-898-6793

Fax: (712)-279-6191

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>>> Desiree McCaslen 5/1/2015 1:41 PM >>>

Lance-

Please find the attached letter concerning the development of the Big Ox facility. A hard copy is also in the mail to you today.

Thanks.

Desiree

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Desiree McCaslen - Re: Permit update

From: Desiree McCaslen
To: Matt Cole
Date: 10/28/2015 3:34 PM
Subject: Re: Permit update
CC: Kevin Bradley; Vicki Baker

Matt-

Thanks for emailing me and calling me today. I reviewed the permit application and the proposed discharge for the South Sioux City facility is approved. A temporary permit shall be issued within the next few months. The temporary discharge permit will be issued for one year. During that time frame an initial treatability study/BMR will be completed, following, an actual discharge permit shall be issued.

As we discussed, the permit shall be issued under categorical regulation 40 CFR 437, for combined waste treatment facilities. The facility shall have 30 days from receipt of the permit to repeal and/or negotiate the permit.

Also, I would like to meet after returning from maternity leave to discuss the Emergency Discharge Plan, the Facility Load Approval/Tracking Plan, the SPCC (if applicable), the SWPPP and the Slug Control Plan which will all be required prior to discharge. These items will be listed as compliance schedule items in the temporary discharge permit.

Please let me know if you need anything else from me at this point. I have copied my Lab Supervisor on this email as she will be the point of contact while I am out with baby. I will also have access to my email while I am out. My leave date is November 10, 2015.

Thanks!!!

Dez

Desiree McCaslen

Pretreatment Manager

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>>> Matt Cole <MCole@bigoxenergy.com> 10/28/2015 9:36 AM >>>

Desiree,

Any update on where our application stands?

Sent from my iPhone

TECHNICAL MEMORANDUM

TO: Jason Osbahr, David Marcus and Rob Ernest, Big Ox Energy (BOE)

FROM: Ed Kobylinski and Chuck Pike, Black & Veatch (BV)

SUBJECT: BOE South Sioux City Facility Odor Control – Startup Plan

DATE: November 30, 2016

As requested, this technical memorandum outlines a recommended Start-up Plan for the anticipated start-up of bypass forcemain (target date: Dec 10, 2016) and operation of the DAF system at the BOE South Sioux City facility.

Recommended Activities Prior to Dec 10th Startup

1. Make modifications to the existing ferric chloride feed system at the plant, to provide capability to inject ferric chloride into the effluent force main. Ferric will precipitate H₂S in the forcemains and gravity sewers between the BOE facility and South Sioux City's Bennet Pump Station.
2. Make provisions for monitoring liquid H₂S concentrations at the bypass pump station and at the force main discharge at the Bennet Pump Station. These liquid samples must be grab samples and must be collected with minimal disturbance of the sample to prevent loss of H₂S from the liquid. The sample should be analyzed at the site and a second sample sealed collected for analysis at the BOE site. Sample bottle must be completely filled, with no headspace, and the sample bottle must not be filled by pouring the sample into the bottle; since any liquid agitation will result in H₂S stripping from the solution. The data collected from both sample points will be used to adjust the target ferric chloride feed dose at BOE.
3. Install gas phase H₂S Odolog units at the same locations as mentioned in #2 above. Monitoring of the H₂S gas concentration in the headspace will confirm that the proper iron dose has been added. The goal should be to have less than 10 ppm of H₂S in the headspace at each location.
4. Monitor H₂S liquid concentrations out of the DAF feed tanks and the centrifuge centrate locations. Measureable liquid H₂S concentrations at either location can result in H₂S emissions at the DAF supernatant overflow. Dose ferric ahead of the DAF as needed to control H₂S gas concentrations in the areas of the building with human occupation. Target should be less than 10 ppm H₂S, and in line with relevant OSHA/ State standards.
5. If the DAF feed tanks start producing H₂S, consider a routine cycling and cleaning/ sanitizing schedule for each tank to prevent anaerobic activity that results in H₂S production. Develop a cleaning/ sanitizing frequency once the system is in operation (after Dec 10). Data obtained prior to resumption of standard plant operation will not be representative of normal operating conditions. Frequency of cleaning/ sanitizing may change as the quantity of wastewater treated through the DAF increases.

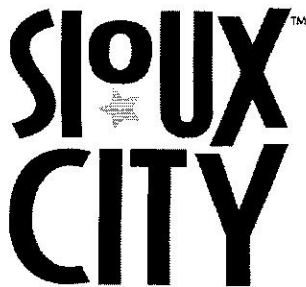
6. Coordinate with the City on sewer H₂S control. They have been adding bioxide, which reduces H₂S generation. Bioxide addition to the gravity sewer will reduce H₂S generation upstream of the bypass forcemain pump station. BOE should still add ferric at the BOE site in sufficient dose to control H₂S levels in the forcemain discharge at the Bennet Pump Station. The same type of monitoring will be needed as described in #2 and #3 above.

Recommended Activities Following the Dec 10 Startup

1. Coordinate with Sioux City to confirm that resumption of full operation of the BOE facility is not interfering with disinfection at the WWTP. (If the BOE discharge has high E. coli levels that are interfering with WWTP disinfection, conduct jar testing to determine the optimal disinfection chemical and dose for the plant discharge.)
2. Closely monitor and review H₂S levels in the sewer system following startup, and adjust ferric doses to optimize performance. Monitoring at BOE will help to determine any problem observed in the sewer is caused by H₂S in the BOE discharge, or if the problem is caused by microbiological growth within the sewer system (which would be more likely, in the event that high H₂S levels are observed downstream).
3. After BOE has optimized ferric doses and has determined the operating cost and performance trends, it is recommended that alternative chemicals be compared to ferric, for cost-effectiveness. In particular, ferrous iron salts may be an advantageous approach in the long term, depending on local availability/pricing, or if high suspended solids levels in the BOE plant discharge become an issue. While bioxide can be considered as well, it should be noted that in most cases that B&V has studied, iron salts have been found to be a lower cost solution than bioxide addition, for H₂S control.
4. The recommended chemical treatment approach (adding ferric to the plant discharge) will not inhibit biological activity in the sewer system. The slime layer growing on the walls of the sewer. Short-term, high-strength (slug) dosing of chlorine, peroxide or the VTX/peroxide products can kill or inactivate bacteria growing in the slime layer of the sewer. That in turn can stop or minimize H₂S production until that layer is reestablished over time. The effectiveness of slug dosing to kill microbial wall slime is best determined in the field, after the BOE facility is full operation. Equivalent doses of the three chemicals can be compared on a cost basis; however, the equivalent doses will have to be estimated based on B&V experience and vendor experience. The estimated dose should be field tested to determine how well each chemical will perform. This testing could take several months to complete, since time must be allowed to determine the dosing frequency that will be required. It will be necessary to allow the slime to regrow and for the bacteria to generate H₂S again with each testing cycle. The overall objective will be to arrive at an optimal dosing scheme involving both regular dosing of iron and periodic slugs of oxidant, in the most cost-effective combination. While microbial activity in the sewer cannot be stopped permanently, periodic slug/ batch treatment can suppress microbial activity

and the resulting H_2S generation to more manageable levels. Oxidant dosing at BOE will only affect a finite length of sewer downstream of the chemical addition point. Each oxidant will kill microbial slime but the oxidation power of the chemical added will quickly dissipate in the wastewater matrix from chemical side reactions. Therefore, multiple application points for the oxidant may be needed. Initial monitoring within the sewer will be required to define the magnitude of H_2S production and to devise an appropriate testing protocol.

5. Monitor the sanitary sewer and headspace H_2S concentrations just upstream of the Bennet Pump Station. This monitoring will determine whether any H_2S is migrating from the Bennet pump station back towards the residential area. This testing will also be able to determine if the gravity sewer is producing H_2S . Liquid H_2S concentrations upstream of the Bennet Pump Station in the gravity residential sewer would be caused by H_2S being formed in the residential sewer section, and not from migration of H_2S gas upstream in the gravity sewer from the pump station. Vapor phase odor control at the Bennet Pump Station can pull a negative pressure on the gravity sewer, to ensure gravity sewer headspace gas flow is toward the Bennet pump station and to reduce or eliminate H_2S migration back upstream to the residential area.



To: Jason Osbahr, Big Ox Energy

Date: 12.30.2016

RE: Compliance Schedule Wastewater Discharge Permit #2016-31-I Updated

The following compliance schedule has been updated and will be implemented as part of the Temporary Wastewater Discharge Permit issued to Big Ox Energy. This compliance schedule has been drafted to contain adequate time for the testing and evaluation of waste streams following during start-up of the facility discharge at 1616 D Avenue, South Sioux City, NE.

During the duration of this compliance schedule Big Ox Energy will be sampled and monitored to determine if any pollutants of concern are present that need to be addressed or controlled through additional control technology and/or if the identified categorical pretreatment regulations apply under 40 CFR 437 for "Centralized Waste Treatment Facilities". Failure to comply with the compliance schedule may result in escalated enforcement actions by the City of Sioux City. Following the completion of the BMR a final wastewater discharge permit will be issued to contain all applicable local limits.

Compliance schedule for the construction and optimization of process equipment:

<u>January 4, 2017-March 1, 2017</u>	Equipment Start Up/Initial Process Evaluation (Daily Samples)
<u>March 1, 2017-July 1, 2017</u>	BMR (Daily Samples) and once a month Categorical sampling for compliance/waiver determination for 40 CFR 437 subpart D
<u>July 1, 2017-July 1, 2017</u>	Final Permit Issuance

Any violation of discharge permit limits during the above compliance schedule will result in Notice of Violation and/or Significant Non-compliance where applicable. As long Big Ox Energy meets the deadline of the above agreed upon compliance schedule there will be no escalation of enforcement. If Big Ox Energy does not meet the deadlines of the agreed upon compliance schedule then the facility will be subject to all relative fines and enforcement actions retroactively.

Jason Osbahr, Big Ox Energy

Date

Desiree McCaslen, Pretreatment Manager, City of Sioux City

Date



January 31, 2017

Jason Osbahr
Big Ox Energy
1616 D Avenue
South Sioux City, NE 68776

Re: Categorical Permit Requirements Waived

On May 1, 2016 a Temporary Discharge Permit was issued to Big Ox Energy for the discharge of wastewater from their facility located in South Sioux City, NE to the Sioux City Wastewater Treatment Plant for treatment and disposal. At that time of the permit issuance, the discharge was classified as Categorical under 40 CFR 437 subpart D. Since that time additional review by EPA Region 7 has determined that the facility is not subject to the Categorical requirements contained in the code as and; which state that "This subpart does not apply to the following discharges of wastewater from a Combined Waste Treatment facility":

- 437.1(b)(8) Wastewater from the treatment of, or recovery of material from, animal or vegetable fats/oil from grease traps or interceptors generated by facilities engaged in food service activities,
- 437.1(b)(9) Wastewater from the treatment of, or recovery of material from, off-site wastes generated by facilities engaged in only food processing.

Effective immediately the attached permit has been amended to remove the Categorical discharge classification and the previously agreed upon compliance schedule is terminated. It should be noted that future modifications to the facility may require the facility to meet Categorical discharge limits if applicable.

If you have questions or comments, please call me at 712-279-6987.

Respectfully,

Desiree McCaslen, City of Sioux City
Pretreatment Manager

Attachment: Amended Temporary Discharge Permit#2016-31-1

cc: IDNR Field Office 3
File